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# Small-time bilinear control for a class of nonlinear parabolic evolution equations

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In this talk, I will present some recent results on small-time reachability properties of a nonlinear parabolic equation, controlled via a bilinear control, defined on a torus of arbitrary dimension. Assuming a saturation condition on the potentials, we establish the small-time approximate controllability between states that share the same sign. Furthermore, in the one-dimensional case, we extend this result by combining it with a local exact controllability property. This approach allows us to demonstrate the small-time exact controllability of any positive state to the ground state of the evolution operator.

This is a joint work with A. Duca and E. Pozzoli.

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